MARYLAND HEALTH CARE COMMISSION

2006–2007

PRACTITIONER UTILIZATION

Trends Among Privately Insured Patients

Released November 2009

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MARYLAND
HEALTH CARE
COMMISSION

The Maryland Health Care Commission (MHCC) is a public, regulatory commission established in 1999 by the Maryland General Assembly through a merger of the Health Care Access and Cost Commission and the Maryland Health Resources Planning Commission. The MHCC mission is to plan for health system needs, promote informed decisionmaking, increase accountability, and improve access in a rapidly changing health care environment by providing timely and accurate information on availability, cost, and quality of services to policymakers, purchasers, providers and the public. The Commission is administratively located within the Maryland Department of Health and Mental Hygiene, and is composed of 15 members appointed by the Governor, with advice and consent of the Senate, for a term of four years.

The MHCC is required under Health-General Article §19-133(g)(2-4) to issue a report describing the level of payments to physicians and other health care practitioners. Each year since 1996, the MHCC has published a professional health services report that provides a detailed analysis of payments to physicians and other health care professionals for the care of privately insured Maryland residents under age 65. The reports are based on health care claims and encounter data that most health insurance plans serving Maryland residents submit annually to the MHCC.

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Ms. Katie Merrell and Dr. Lan Zhao of SSS's Center for Health Research and Policy conducted the analyses described in this report. A programming team at SSS consisting of Mr. Adrien Ndikumwami, Ms. Sanee Maphungphong, and Mr. Po-Lun Chou edited the payer data submissions, organized the MCDB, and developed the data estimates included here. Dr. Z. Joan Wang and her staff at Avar provided data collection and processing support. Ms. Polly Gilbert edited the report, and Ms. Beverly Valdez and Ms. Laura Spofford assisted in the preparation of the report. The Commission thanks the SSS and Avar teams.

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Report Highlights

This report describes the use of professional health care services by privately insured Maryland residents during calendar year 2007, and the payments made to practitioners by insurance companies and recipients for these services. Unless otherwise noted, the data source for all analyses in the report is the Maryland Medical Care Data Base (MCDB), which contains information on privately insured professional services used by Maryland residents.[1]

Professional service use is characterized by three key measures: a) the average annual expenditure per user; b) the average number of professional services obtained during the year; and c) the average complexity of these services, with complexity defined by the number of relative value units[2] (RVUs) per service. Payments to health care professionals are described using the average payment-per-RVU and the ratio of the actual expenditure per user to the payment that would have resulted if the Medicare fee schedule had been applied.

HIGHLIGHTS FROM THE REPORT

Growth in Per-User Spending

Between 2006 and 2007 the average expenditure per user for professional services among users insured for the entire year[3] grew by 3 percent. This growth is mainly attributable to a 3 percent increase in the total number of services per user; there also was a 1 percent increase in the average payment-per-RUV. The average complexity of the services was the same in both 2006 and 2007. The good news for Maryland residents is that increases in per-capita personal income have generally kept pace with the growth in spending for professional services, so that per-user spending has accounted for a stable 2 percent of per-capita personal income since 2004. Expenditure growth among full-year users in 2007 varies considerably by type of coverage, ranging from no increase in individual market plans to a 6 percent average increase in large group private employer plans. Spending by users insured through consumer-directed health plans (CDHPs), which are now available in all market segments, increased an average of 7 percent.[4]

Expenditures for Professional Services Differ Significantly by Patient Risk

An expenditure risk score—which is a measure of a person's need for medical care—was calculated for each full-year user, and users were assigned to one of three categories: "low-risk," "medium-risk," or "high-risk."[5] The annual expenditure for a medium-risk user is about twice that of a low-risk user, and the annual expenditure for a high-risk user is about five times that of a low-risk user. Stated another way, the 33 percent of users with the highest risk generated 63 percent of professional service expenditures. The average expenditure per user in different coverage types is strongly influenced by the risk-mix of the users. Users insured in the individual market have the lowest overall risk mix and the lowest average expenditure per user.

Differences by Payer Market Share

When the two largest payers were compared with the other payers, there was no difference in the risk-mix of their users in 2007. However, there were differences in their payments to health care professionals, the use of out-of-network providers, and the geographic mix of their users and providers. The analysis of average payment-per-RVU across all professional services continues to demonstrate that payment-per-RVU is lower in services insured by the largest payers. To some extent, market share reflects the price-setting power of payers, so it is not surprising that the largest payers average a lower payment-per-RVU compared to the other payers. But the higher payment-per-RVU

[1] A detailed description of the MCDB is included in Appendix A, and the list of insurers who submitted 2007 insurance claim data to the MCDB is located in Appendix D. The analysis excludes capitated services, which lack payment information, as described in *Note on Capitated Services* on page 6.

[2] See *Key Terms* on page 5 for the definition of relative value unit.

[3] See page 3 for the definition of a full-year user.

[4] CDHPs typically have very high patient deductibles. The 2009 minimum annual in-network deductibles are $1,150 for single policies and $2,300 for family policies.

[5] See Chapter 1 for a description of the expenditure risk score and category assignment.

among services insured by the other payers also reflects relatively more services obtained from out-of-network providers and differences in the geographic mix of their patients and providers.

In 2007, the average payment-per-RVU for services provided by out-of-network providers—whether overall or by payer group—was about 50 percent higher than the average payment-per-RVU across all services.[6] This higher payment-per-RVU reflects the "balance billing" of non-HMO users, which results in potentially higher reimbursement rates for out-of-network providers. Out-of-network services comprise about 9 percent of the professional services covered by other payers, more than twice the out-of-network share in services covered by the largest payers. Out-of-network volume is higher for other payers because their provider networks tend to be smaller.

Consumer-Directed Health Plans

Professional service utilization by users enrolled in CDHPs for the entire year changed considerably from 2006 to 2007. The average per-user expenditure increased by 7 percent due to a large increase in the average number of services per user, coupled with an increase in the complexity of the services obtained; the upward pressure on spending from service use was partially offset by a decrease in the average payment-per-RVU. These shifts are related to the entry of the largest payer into the CDHP market, which brought more users into CDHPs in 2007 and changed the CDHP user profile and made the mix of services utilized more similar to those of users in non-CDHPs. As there is typically an 18-month lag between spending and premium changes, the 2007 growth in spending per CDHP user explains a significant share of recent premium increases in that market.

[6] Payments to be paid directly out-of-pocket by the patient for deductible, coinsurance, and balance billing amounts reported on the claims data were assumed to have been paid. Balance billing occurs when a non-HMO patient uses an out-of-network provider and is required to pay that provider the difference between the provider's billed amount and the payer's out-of-network reimbursement amount. However, some users may not pay the entire balance billed amount.

1. Introduction

As required by the Maryland Health-General Article §19-133(g)(2-4), the Maryland Health Care Commission (MHCC) has published a report on the use of professional medical services by state residents with private health insurance annually since 1996. The main purpose of the professional services report series is:

- To describe the use of—and trends in use of—insured professional medical services by nonelderly Maryland residents with private health insurance, and
- To analyze the payments made by insurance companies and recipients for these services.

As with all previous professional services reports, this 2007 report is based on analyses using data from the Maryland Medical Care Data Base (MCDB). The MCDB includes information for individuals covered by private insurance who use insured professional services during each year. Private health insurance plans that serve Maryland residents, with the exception of a number of small payers, have been submitting data for inclusion in the MCDB annually since 1996.

This introductory chapter explains key concepts used in the report. Chapter 2 presents an overview of utilization of and payments for professional services among nonelderly Maryland residents covered by private insurance. It reports findings per service user at the aggregate level (among all service users), with comparisons in spending and utilization between 2006 and 2007. Chapter 3 analyzes the relationship between price, volume, service complexity, and total spending among service users who were enrolled in a private insurance plan for the entire year. Because data for part-year users are likely to be incomplete, focusing on full-year users results in a more accurate estimation of annual service use and understanding of how price, volume, and intensity contribute to changes in payments for professional services in Maryland. Appendix A provides a technical background, including a summary of data, methods, and caveats for this report. Appendix B contains supplemental data on per-user expenditures and the relative value units (RVUs) for professional services. Appendix C includes tables that summarize the distribution of full-year users' expenditures for professional services in 2007 by user health status, as measured by expenditure risk scores and coverage type; the decomposition of per-user expenditure by user, plan, and payer characteristics in 2006; the distribution of expenditure risk scores by user characteristics; and charts that present the share of users for the two largest payers compared to the share of users for other payers in the state by coverage type, user risk status, plan type, and region. Appendix D lists the payers contributing data to this report.

KEY CONCEPTS

Study Populations: All Users versus Full-Year Enrollees

The MHCC's professional medical services reports are based on information from private insurers in Maryland for covered (insured) services used by nonelderly Maryland residents. If a privately insured nonelderly person did not use any covered professional services, and thus had no claim or encounter in a particular year, this individual will not appear in the MCDB and, therefore, will not be part of the analyses for that year. Findings in this report pertain only to the nonelderly privately insured who used one or more professional services, i.e., *the users*, rather than the whole nonelderly, privately insured population.

Spending and utilization are measured *per user, within a plan,* because it is impossible to identify the same person across different plans. Individuals who are covered by more than one plan during a year may be double-counted, so the number of users reported here may exceed the actual number of unique individuals who were covered by the payers that contributed data to the MCDB and who used a professional service. Changes in the number of users between years may reflect five factors: changes in the number of individuals covered by private insurance; the share of insured individuals who use practitioner services; the share of users who were covered by more than one plan during the year; the number of payers that submit data to the MCDB, and the completeness of the data submitted by the payers.

TABLE 1-1: Distribution and Count of All Users and Full-Year Users by Coverage Type, 2007

	Percentage of All Users	Percentage of Full-Year Users
ALL	2,465,369	1,850,815
COVERAGE TYPE		
Non-CDHP	94%	95%
1: Individual Plan	6	6
2: Private Employer Plan	39	36
3: Public Employer Plan	34	40
4: CSHBP	14	12
CDHP	6	5

NOTES: 1. CDHP = consumer-directed health plan; CSHBP = Comprehensive Standard Health Benefit Plan.
2. Users have at least one professional service claim with payment information (capitated services are excluded from these analyses).
3. Full-year users are those enrolled in the same insurance plan for the entire year. Enrollees who have more than one coverage type are assigned the coverage type associated with the highest total RVUs, payment, number of services, or the most recent recorded coverage type, if the coverage types are tied on total RVUs, payment, and number of services.
4. Detail may not add to total due to rounding.

In 2007, there were about 2.5 million users, 2 percent and 5 percent more than the number of users in 2006 and 2005, respectively (data not shown). As in 2006, three-quarters of users in 2007 were enrolled in the same plan for the entire calendar year (Table 1-1). Overall, the relationship between coverage type and the share of users who were enrolled in the same plan throughout the calendar year exhibits a similar pattern in 2007 and 2006. The vast majority of individuals insured through public employers (about 89 percent in both years) were full-year enrollees, resulting in a higher share of public employer plan enrollees among full-year users than among all users: 40 percent versus 34 percent. On the other hand, those insured through the Comprehensive Standard Health Benefit Plan (CSHBP) for small businesses and through larger private employers are slightly smaller shares of full-year users than of all users in both years.

Compared to users in other types of non-consumer-directed health plan (CDHP) coverage, those insured through the CSHBP are much less likely to hold insurance with the same plan throughout the calendar year: 58 percent and 61 percent in 2006 and 2007, respectively (data not shown). Given that the contract year for small employers often does not coincide with the calendar year, this pattern may result from employers in the CSHBP who change plans or initiate or drop health insurance coverage during the calendar year. It also may reflect a high rate of employee turnover in small firms and/or high turnover in the small firms themselves.

Users in CDHP plans were also less likely to be full-year users: 63 percent in 2007 (data not shown). However, the lower share of full-year users in CDHPs in 2007 was mainly a result of the relatively large growth in CDHP enrollment in 2007. Because this enrollment occurred throughout the year, it produced a relatively large share of users who were covered for less than a year.

User, Insurance Plan, Payer, Provider, and Service Characteristics

Users, providers, and insurance plans and payers all play a role in determining the use and cost of professional services. In this report, we examine: a) how per-user expenditures and service utilization vary by user, plan, and payer characteristics; and b) how payments-per-RVU vary by payer and provider characteristics. We also measure the annual change in the average expenditure per user by user, plan, and payer characteristics, and we identify changes in the factors that determine the level of per-user expenditures. These factors include: a) the number of services received; b) the average complexity of these services; and c) the average payment-per-RVU for the services.

USER CHARACTERISTICS: Even for users within the same plan type, use of health care services varies based on the user's health status and on reasons related to geographic location.

- Geographic region divides the state into three regions: the National Capital Area (NCA) (Montgomery and Prince George's counties), Metropolitan Baltimore, and all other areas.
- The Expenditure Risk Score measures the need for medical care. The healthier a person, the less medical care is needed, regardless of the person's demographic and socioeconomic characteristics. We report utilization and spending for full-year users grouped by a measure of their need for medical care, here defined by the Chronic Illness and Disability Payment System (CDPS). The CDPS, developed by researchers at the University of California,

KEY TERMS

TOTAL PAYMENTS FOR PRACTITIONER CARE Sum of payments from the insurer and patient, including deductible, coinsurance, and balance billing amounts reported on the claims data, and to be paid directly out-of-pocket by the patient.

COUNT OF SERVICES A simple count of the number of services provided to patients (as listed on the bills), without regard to the cost, complexity, or intensity of those services.

RELATIVE VALUE UNITS (RVUS) OF CARE A measure of the quantity of care, in which more complex, resource-intensive (and typically more costly) services have more RVUs. A more sophisticated measure of the quantity of care than a simple count of services, RVUs measure the level of resources used to produce a particular service. Service complexity, or resource intensity, is measured by the number of RVUs per service. Medicare's physician payment system was used as the source of information on the number of RVUs for each service. For this report, RVUs from the 2007 Medicare fee schedule were applied to both 2006 and 2007 data.

COUNT OF SERVICE USERS A count of the encrypted patient identifiers reported by payers. Because payers may use different encryption systems for their different insurance products (plans), the count is made within each specific plan. Counts of users may overstate the actual number of users of professional services, because individuals who are insured under more than one product during a year will be counted separately under each.

PAYMENT AT MEDICARE PAYMENT LEVEL The Medicare fee schedule, based on RVUs, is used to benchmark: a) service utilization, using RVUs, and b) private insurance payments to Medicare payments. Medicare RVUs are merged to each service in the MCDB by CPT® (Current Procedural Terminology) code, and the Medicare conversion factor is applied to calculate payment for the service at the Medicare payment level.

San Diego, categorizes an individual's risk of having significant medical expenditures from the number and mix of diagnoses recorded on his or her insurance claims.

A risk score was calculated for each user enrolled for the entire year in the same data-reporting plan using only professional service claims. The resulting distribution of scores was divided into thirds, and individuals were assigned to one of three categories—"low-risk," "medium-risk," or "high-risk"—based on their position in the distribution.

PLAN AND PAYER CHARACTERISTICS: Throughout this report, insurance plans and payers are categorized in the following dimensions:

- Coverage type differentiates between CDHPs and, among non-CDHPs, whether the private insurance is bought on an individual basis or through an employer. Among employer-sponsored plans, there are three groups—private employers, public employers, and the CSHBP for small businesses.
- Plan type distinguishes between health maintenance organizations (HMOs) and non-HMOs—typically preferred provider organizations (PPOs), which differ in the breadth of their provider networks. PPOs have larger networks and their reimbursement for out-of-network services is limited to emergency care only in HMOs.
- Market share separates the two largest payers from all other payers, because they may differ in their ability to lead rather than follow market trends.

PROVIDER CHARACTERISTICS: A provider's reimbursement for a service generally reflects the number of RVUs associated with the service—although other factors are involved—and differs by payer. Even for the same service within the same payer, the average price per unit of service—here measured as average payment per RVU—can vary based on geographic location of the provider and whether the provider and payer have a payment agreement (*a participating provider*).[7]

- Geographic region divides the providers into four categories based on their geographic location, which may be outside of Maryland. Providers in locations with higher resource costs tend to receive higher average payment-per-RVU. The provider regions include the Baltimore Metropolitan Area (BMA); the NCA (Montgomery and Prince George's counties, and locations in Northern Virginia); other areas in Maryland or in adjacent states (excluding Virginia); and providers in more distant or unknown locations.
- Out-of-network services are services obtained by a user from providers who are not part of the user's participating provider network, or for which the user was required to, but did not, obtain a referral.

SERVICE CHARACTERISTICS: Professional services differ in the level of resources required to provide the service. The resources associated with a particular service include the professional's work, practice expenses, and liability insurance, and they can be described using the total number of RVUs (see *Key Terms* on page 5) associated with the service.

- Average number of RVUs per service is used to describe the average complexity (resource intensity) of a set of services. This service set may be all the services; the services obtained by the users in a particular risk category, coverage or plan type, or payer group; or the services provided by the professionals in a particular geographic region or payer network. Services of greater complexity contain more RVUs, leading to higher payment per service.

Note on Capitated Services: The MCDB's information on professional services includes both health care claims—with payment information—and encounter records for capitated services, which do not have payment data. Payment to a provider for a capitated service is independent of the actual service. Instead, the reimbursement to the provider comes in a regular (monthly) payment based on the number of enrollees for which the provider is "responsible." Because they lack payment information, encounter records were not included in these analyses. The exclusion of encounter records results in the estimates' of professional services utilization and spending being somewhat understated for HMO users, and, by extension, for all users, although to a lesser degree. In the 2007 MCDB, capitated professional services accounted for 18 percent of the professional HMO RVUs and 7 percent of all RVUs. Use of capitation by payers is limited to HMO plans for a select set of routine services, and may include simple X-rays and screening activities.

[7] A payer's payment for the same service can vary by provider, even within specialty, based on network participation, practice size, the practice's reputation, and the number of competing practices in the same area.

2. Overview of 2007 Professional Services in Maryland

Trends in Per-User Expenditures for Professional Services

In 2007, the overall per-user expenditure[8] for practitioner services was $974, a 4 percent increase from $941 in 2006 (Table 2-1). When adjusted for general inflation, the real increase in per-user spending was 0.6 percent, similar to the real increase of 0.7 percent in 2006 (Figure 2-1). Over the past few years, the inflation-adjusted growth in per-user spending has been less than 1 percent or slightly negative. The good news for Maryland residents is that increases in per-capita personal income have generally kept pace with the growth in practitioner spending, so that per-user spending has accounted for a stable 2 percent of per capita personal income throughout this period.

[8] The data in this report do not include professional services that were paid on a capitated basis by HMO plans. In the 2007 MCDB, capitated professional services accounted for 18 percent of the professional HMO RVUs and 7 percent of all RVUs (all users), down from 21 percent of HMO RVUs and 9 percent of all RVUs in 2006. The exclusion of capitated services results in the estimates' of professional service utilization and spending being somewhat understated for HMO users, and, by extension, for all users, although to a lesser degree. See *Note on Capitated Services* on page 6.

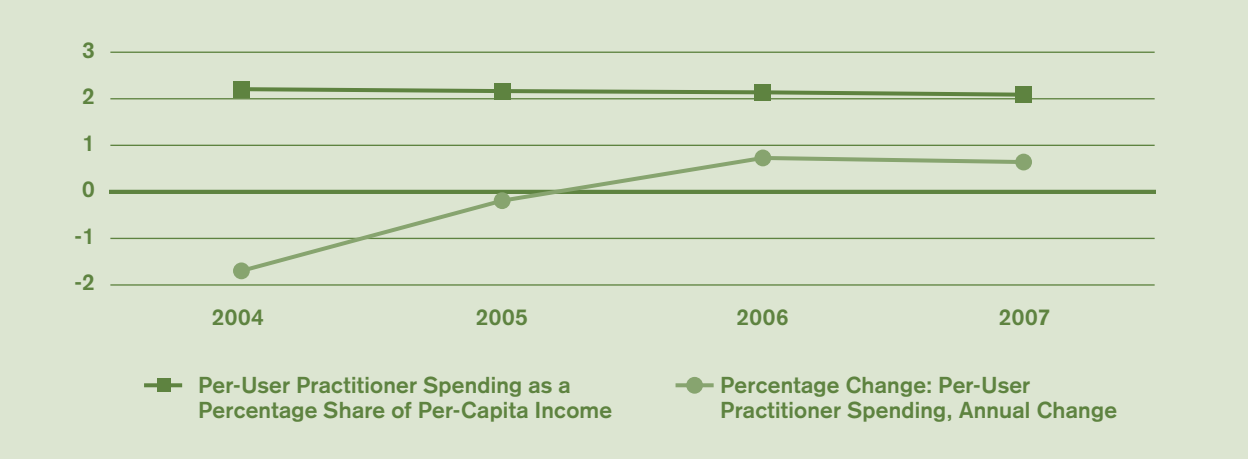
Per-User Spending[9] by Coverage and Plan Types

Average spending among users in plans of different coverage types varies noticeably, and the pattern is similar in 2006 and 2007 (Table 2-1). Per-user spending is the highest among users covered by public employer plans and the lowest among users covered by individual plans, a difference of 20 percent and 21 percent in 2006 and 2007, respectively. Users in all coverage types demonstrated an increase in per-user spending in 2007, with the increase ranging from 1 percent for individual and CDHPs to 7 percent for CSHBP (small group market) plans. Public employer plans registered a modest 2 percent increase, compared with a 5 percent increase for private employer plans.

On average, users covered by non-HMO plans had significantly higher expenditures than did those in HMO plans—24 percent higher for non-HMO users compared with HMO users in 2007. Some of this difference in spending results from a lack of information on expenditures for capitated professional services in HMO plans, which accounted for 18

[9] Spending per user for the different expenditure risk categories is discussed in Chapter 3.

FIGURE 2-1: Annual Change in Per-User Practitioner Spending and Per-User Practitioner Spending as a Percentage Share of Per-Capita Income, 2004–2007



NOTES: 1. Both "Per-Capita Income" and "Per-User Practitioner Spending" are measured in 2000 dollars.
2. Population includes all enrollees with at least one fee-for-service.
3. Capitated services are excluded because no payment information is available.

TABLE 2-1: Distribution of Users and Practioner Expenditures by Users' Coverage Type, Plan Type, Region, and Payer Market Share, 2006–2007

	2006			2007			Percentage Change in Per-User Expenditure, 2006–2007
	Percentage of All Users	Expenditure Per User	Percentage of Payment	Percentage of All Users	Expenditure Per User	Percentage of Payment	
ALL	100%	$941	100%	100%	$974	100%	4%
COVERAGE TYPE							
Non-CDHP	99	943	99	94	982	94	4
1: Individual Plan	6	842	5	6	854	5	1
2: Private Employer Plan	42	930	42	39	980	39	5
3: Public Employer Plan	34	1,012	36	34	1,036	36	2
4: CSHBP	17	868	15	14	933	13	7
CDHP	1	859	1	6	868	6	1
PLAN TYPE							
Non-HMO	60	1,030	66	62	1,052	67	2
HMO	40	809	34	38	848	33	5
REGION							
National Capital Area	32	1,097	34	32	1,046	34	5
Baltimore Metropolitan Area	47	1,042	46	47	958	46	3
Other Maryland Area	21	976	20	22	904	20	0
PAYER MARKET SHARE							
Largest Payers	73	935	72	74	961	73	3
Other Payers	27	957	28	26	1,013	27	6

NOTES: 1. CDHP = consumer-directed health plan; CSHBP = Comprehensive Standard Health Benefit Plan; HMO = health maintenance organization.
2. Detail may not add to total due to rounding.
3. 0% indicates <0.5%

percent of the professional resources—measured in RVUs—obtained by users in HMO plans in 2007. (See Chapter 1 for definitions of capitated services and RVUs.) This gap in spending was slightly smaller in 2007 than in 2006 due to higher growth (5 percent versus 2 percent) in per-user spending for HMO plans compared with non-HMO plans.[10]

Per-User Spending by User Location and Payer Market Share

The average per-user expenditure for professional services among those residing in the NCA is higher than the averages for users in other regions of the state: 9 percent higher than the average among BMA users and almost 16 percent higher than the average among users living in other Maryland areas in 2007 (Table 2-1). Furthermore, these differences are slightly greater than in 2006 due to higher growth in per-user spending in the NCA (5 percent) than elsewhere in the state.

The higher growth (6 percent versus 3 percent) in per-user spending for those enrolled with payers other than the two largest increased the gap in per-user spending between the largest and the other payers (Table 2-1). Per-user spending for those enrolled with the largest payers was, on average, about 5 percent below spending for those enrolled with the other payers in 2007; in 2006 there was a 2 percent difference.

[10] The higher growth rate for HMO plans may, in part, reflect a slight reduction in the share of HMO services that were reimbursed using capitation from 2006 to 2007, cited in footnote 8.

Distribution of Users and Payments by Coverage and Plan Types

In 2007, the share of users in CDHPs increased significantly, to account for 6 percent of all users, although the vast majority (94 percent) of users continue to be enrolled in non-CDHPs (Table 2-1). Among the users in non-CDHPs, the share insured through private employers continued to fall, from 44 percent in 2005 (data not shown), to 42 percent in 2006, to 39 percent in 2007.[11] As in 2006, the majority of all users were enrolled in non-HMO products, and this share increased slightly, to 62 percent, in 2007.

The distribution of expenditures for professional service by coverage and plan types basically corresponds to the distribution of users (Table 2-1). However, users in public employer plans account for a larger share of payments (36 percent) than of users (34 percent), as a consequence of their highest-in-category level of per-user spending.[12] Conversely, users in individual and CSHBP plans account for smaller shares of payments than of users because of per-user spending that is below average. Similarly, non-HMO users account for a larger share of payments than of users in both years because their average spending per user is higher than in HMO plans.[13]

Distribution of Users and Payments by User Location and Payer Market Share

The geographic distributions of users and payments were essentially unchanged from 2006 to 2007 (Table 2-1). The BMA accounted for almost one-half of both users and payments. Because those residing in the NCA have the highest spending per user, NCA users account for a larger share of payments (34 percent) than of users (32 percent); conversely, users in other areas of the state account for slightly smaller shares of payments than of users.

The share of users covered by the two largest payers increased by a little less than 1 percent, amounting to 74 percent of all users in 2007 (Table 2-1). Users enrolled with other payers account for a slightly larger share of payments than of users, because their average spending is higher than for users covered by the largest payers.

Sources of the Growth in Per-User Spending

The average expenditure per user for professional services reflects the volume and complexity of the services being used, as well as the payment-per-RVU for those services. Because data for part-year users are likely to be incomplete, analyzing service users who were enrolled in a private insurance plan for the entire year results in a more accurate estimation of annual professional service use and understanding of how price, volume, and service intensity contributed to changes in per-user spending; this analysis is presented in Chapter 3.

Differences in unit pricing are easiest to understand when factors that contribute to price differences, including geographic location of the provider and network participation status of the provider rendering services are controlled. (See Chapter 1 for the definition of a participating provider.) These factors are exacerbated by the dominance of one or two payers in certain market. Small practices will often participate with dominant payers, even though they view the unit prices offered as unfavorable. A less dominant payer will not have this advantage.

The remainder of this chapter is a discussion of how payment-per-RVU differs by payer market share for these provider characteristics. The analysis was conducted on all non-capitated services received by all users;[14] payment includes all expected reimbursements to the provider, from both the payer and the user of care. Because users can obtain care from out-of-state providers, these geographic categories differ from those of the users: Washington, D.C., and Virginia are included in the NCA; providers in other adjoining states are included in "Other Maryland Area." Providers from non-adjoining states are assigned to "Other Service Areas."

[11] *Practitioner Utilization: Trends Among Privately Insured Patients, 2005–2006*. Maryland Health Care Commission. May 2008.

[12] Public employer plans have relatively more high-risk users. See Chapter 3.

[13] Because professional services that are paid on a capitated basis are not included in this report, comparisons between users in non-HMO and HMO plans should be made with caution. See *Note on Capitated Services* on page 6.

[14] Because this analysis is from the providers' perspective, data for users who were not enrolled in a plan for the whole year will not affect the accuracy of the analysis.

TABLE 2-2A: Payment Rates and Distribution of RVUs by Provider Region and Payer Market Share, 2007

REGION	All Practitioner Services			Services Paid by Largest Payers			Services Paid by Other Payers		
	Percentage of RVUs	Payment per RVU	RVU per Service	Percentage of RVUs	Payment per RVU	RVU per Service	Percentage of RVUs	Payment per RVU	RVU per Service
TOTAL	100%	$38.0	1.7	100%	$36.5	1.7	100%	$42.7	1.8
1: National Capital Area, including Virginia	32	39.8	1.8	30	37.7	1.8	37	44.8	1.9
2: Baltimore Metropolitan Area	48	36.7	1.8	50	35.6	1.9	42	41.1	1.7
3: Other Maryland Area and border states (other than Virginia): Delaware, Pennsylvania, and West Virginia	15	37.2	1.7	15	36.1	1.7	14	40.9	1.9
4: Other Service Areas	6	40.4	1.2	5	38.7	1.2	6	45.1	1.4

NOTES: 1. Detail may not add to total due to rounding.
2. Includes services with payment >$0 and RVU >0.
3. Out-of-network payment assumes the provider successfully collects a substantial payment from the patient, which is not always the case.

Price Differences by Payer Market Share

To some extent, market share reflects the price-setting power of payers, so it is not surprising that the average payment-per-RVU across all professional services is lower among the largest payers than among the other payers: $36.50 versus $42.70, a difference of 17 percent (Table 2-2A). However, the higher payment-per-RVU paid by other payers also reflects differences in the geographic mix of their patients and providers, and relatively more services from out-of-network providers, as described below (Table 2-2B).

Price Differences by Provider Location

Providers in locations with higher resource costs tend to receive higher reimbursement rates from payers. In keeping with their relatively higher resource costs, providers located in the NCA receive a higher payment-per-RVU than do other providers located in Maryland or bordering states. Within each region, the average payment-per-RVU paid by the largest payers was below the rate paid by the other payers, with the difference ranging from a 19 percent lower payment-per-RVU for providers in the NCA, to a 13 percent lower payment-per-RVU for providers in other Maryland areas and bordering states.

Compared to the largest payers, the other payers have larger shares of their professional services—reported as the share of professional RVUs—generated by providers who reside in locations with higher reimbursement levels, specifically NCA and Other Service Areas. This contributes to the higher average payment-per-RVU paid by other payers.

Price Differences by Participation Status

The average payment-per-RVU paid to out-of-network providers in 2007—whether overall or by payer group—was about 50 percent higher than the average payment-per-RVU across all services. The higher unit prices for these services reflect reimbursement rules for out-of-network covered services, which generally require the non-HMO enrollees to pay an out-of-network provider the difference between the provider's billed amount and the payer's out-of-network reimbursement amount. The "balance billing" of non-HMO users translates into significantly higher cost-sharing for users of out-of-network services and potentially higher reimbursement rates for the out-of-network provider.

The regional pattern in payment-per-RVU for out-of-network services differs from the pattern observed in all services, with out-of-network rates' for the largest payers being highest for providers located in the NCA, but out-of-network rates' for the other payers being highest for providers in the BMA. And

TABLE 2-2B: Payment Rates and Distribution of RVUs by Provider Region, Network Status, and Payer Market Share, 2007

REGION	All Practitioner Services			Services Paid by Largest Payers			Services Paid by Other Payers		
	Percentage of Area RVUs Out-of-Network	Payment per RVU Out-of-Network	RVU per Service Out-of-Network	Percentage of Area RVUs Out-of-Network	Payment per RVU Out-of-Network	RVU per Service Out-of-Network	Percentage of Area RVUs Out-of-Network	Payment per RVU Out-of-Network	RVU per Service Out-of-Network
TOTAL	6%	$57.4	1.7	4%	$53.5	1.7	9%	$62.9	1.7
1: National Capital Area, including Virginia	6	65.1	1.7	4	67.3	1.9	11	63.2	1.5
2: Baltimore Metropolitan Area	4	51.7	1.8	4	45.3	1.7	7	64.2	1.9
3: Other Maryland Area and border states (other than Virginia): Delaware, Pennsylvania, and West Virginia	7	52.8	2.0	6	50.0	1.9	10	58.3	2.3
4: Other Service Areas	10	59.5	1.4	9	56.9	1.4	15	63.7	1.3

NOTES: 1. Detail may not add to total due to rounding.
2. Includes services with payment >$0 and RVU >0.
3. Out-of-network payment assumes the provider successfully collects a substantial payment from the patient, which is not always the case.

although the largest payers have a lower average payment-per-RVU across all services compared to other payers, they do not have the lower payment-per-RVU for out-of-network services within each provider region: in out-of-network services from NCA providers, the largest payers' payment-per-RVU is higher than that of the other payers.

Out-of-network services comprise about 9 percent of the professional services—reported as the out-of-network share of professional RVUs—covered by other payers. This is more than twice the out-of-network share in services reimbursed by the largest payers. Out-of-network volume is higher for other payers, because their provider networks tend to be smaller. A provider's decision to participate with a payer is influenced by the number of patients insured by any given payer; payers with more enrollees are likely to generate more patients for a provider than payers with fewer enrollees.

3. Decomposition of Spending on Professional Services: Volume, Intensity, and Price

This chapter examines the roles of service volume, service complexity, and unit pricing in *per-user* expenditures for professional services. It is based on data for full-year users—users who were enrolled in the same data-reporting plan for the entire calendar year. Among full-year users, the expenditure per user was $1,081 in 2007 (Table 3-1); among all users—including part-year users whose data may be incomplete—the fee-for-service expenditure per user was lower, $974 (Table 2-1).

Following MHCC's convention for decomposing spending, service volume is captured through the number of services per user; complexity is measured by the average number of RVUs per service; and unit price is estimated through payment-per-RVU, with payment including both payer and user cost-sharing (out-of-pocket) amounts.

As described in Chapter 1, professional services that were paid on a capitated basis by HMO plans are not included in these data.[15] The exclusion of capitated services results in the estimates' of professional service utilization and spending being somewhat understated for HMO users, and, by extension, for users overall (although to a lesser degree). Additionally, to the extent that certain, less complex services—such as routine primary care and laboratory tests—are more likely to be paid on a capitated basis than are more complex services, average service complexity in HMO users may be artificially high due to exclusion of some less complex services (Table 3-2).

Risk Score Distributions of Users and Payments

Table 3-1 shows the expenditure risk[16] composition of full-year users in 2007 by plan characteristics (coverage type and plan type), the region in which the user resides, and payer market share. In general, these risk compositions are similar to the patterns observed in 2006. With regard to coverage type, CDHPs have a higher share of low-risk users and a lower share of high-risk users than do non-CDHPs. Those in individual plans appear to be the healthiest of all users. Because the individual market is subject to medical underwriting,[17] enrollees in individual plans are likely to be healthier than enrollees in plans that do not use medical underwriting. In contrast, users in public employer plans are more likely to be high-risk than are users in the other coverage types. Neither plan type nor payer market share exhibits differences with regard to user risk status. Users residing in the NCA on average appear to be slightly healthier than those in the BMA, with the NCA users' having a higher proportion of low-risk users and a lower proportion of high-risk users compared with the BMA users.

The share of professional service expenditures generated by high-risk users exceeds their share of the users by a considerable margin, while the low-risk users account for less of the expenditures than their patient share would predict. Excluding users in individual plans, high-risk users comprise 31–35 percent of the users in each coverage type, but are responsible for 61–66 percent of the expenditures for professional services (Appendix Table C-1); in contrast, low-risk users are 33–37 percent of the users, but account for just 12–14 percent of the payments. Compared to the other coverage types, individual plan users are more likely to be low-risk and less likely to be high-risk, because this segment of the insurance market in Maryland

[15] In the 2007 MCDB, capitated practitioner services accounted for 18 percent of the HMO RVUs and 7 percent of all RVUs in full-year users, down from 21 percent of HMO RVUs and 8 percent of all RVUs in full-year users in 2006.

[16] See *Expenditure Risk Score* on page 4 for a definition.

[17] Medical underwriting is the use of medical or health status information in evaluating an applicant for insurance coverage to determine whether an applicant will be offered coverage and/or what premium rate to set for the policy.

is subject to individual medical underwriting and preexisting condition restrictions.[18] The lower risk of this population is reflected in their expenditure distribution, with 18 percent of professional service payments attributable to low-risk users and 54 percent attributable to high-risk users (Appendix Table C-1).

Per-User Expenditures by Risk Score

The annual expenditure for a medium-risk user is about twice that of a low-risk user, and the annual expenditure for a high-risk user is about five times that of a low-risk user (Table 3-1). Data in Table 3-1 suggest that the risk mix of users strongly influences the average expenditure per user by coverage type. Within each risk category, per-user spending was the lowest for those enrolled in public employer plans; in contrast, per-user spending for individual plan users who were low-, medium-, and high-risk, was higher than that of users in public employer plans by 11 percent, 9 percent, and 2 percent, respectively. However, the significantly healthier user mix in individual plans produced an average expenditure for individual plan users that was 9 percent lower than the average for those in public employer plans. The pattern of per-user spending across coverage types in 2007 is generally similar to that observed in 2006, with one exception. Per-user spending for private employer plans in 2007 was 3 percent higher than that of public employer plans; in the past, the per-user average had been lower among those in private employer plans.

[18] A significant number of individuals in this market are denied coverage and purchase coverage through Maryland's high-risk pool called the Maryland Health Insurance Program.

TABLE 3-1: Distribution of Full-Year Users and Professional Service Expenditures by Users' Coverage Type, Plan Type, Region, and Payer Market Share, 2007

	Percentage of Users				Expenditure Per User			
	All Users	Low-Risk Users	Medium-Risk Users	High-Risk Users	All Users	Low-Risk Users	Medium-Risk Users	High-Risk Users
ALL	100%	35%	32%	33%	$1,081	$397	$814	$2,067
COVERAGE TYPE								
Non-CDHP	100	35	32	33	1,084	397	814	2,069
1: Individual Plan	100	43	32	26	978	413	848	2,074
2: Private Employer Plan	100	35	32	32	1,108	418	845	2,122
3: Public Employer Plan	100	33	32	35	1,077	373	778	2,027
4: CSHBP	100	35	32	34	1,109	409	842	2,083
CDHP	100	37	32	31	1,031	401	803	2,029
PLAN TYPE								
Non-HMO	100	35	32	33	1,166	429	878	2,222
HMO	100	35	32	33	939	344	705	1,803
REGION								
National Capital Area	100	36	32	32	1,148	417	876	2,238
Baltimore Metropolitan Area	100	34	32	34	1,072	398	804	2,011
Other Maryland Area	100	35	32	33	1,000	362	739	1,936
PAYER MARKET SHARE								
Largest Payers	100	35	32	33	1,066	382	797	2,043
Other Payers	100	35	32	33	1,126	437	860	2,136

NOTES: 1. CDHP = consumer-directed health plan; CSHBP = Comprehensive Standard Health Benefit Plan; HMO = health maintenance organization.
2. Population is users enrolled in the same insurance plan for the entire year.
3. The resulting risk status groups do not each include exactly one-third of the population, because the cutoff score values applied to many users.

Although the NCA had a relatively healthier user mix than did the BMA, the average spending per-user was 7 percent higher in the NCA than that in the BMA. This results from NCA per-user spending's being higher than that of BMA users in each risk category, with the differences ranging from 5 percent higher in low-risk users to 11 percent higher in high-risk users. The higher spending per user for each risk category of NCA residents reflects the higher payment-per-RVU received by providers in the NCA (Table 2-2A and Table 2-2B).

Factors Responsible for Growth in Per-User Spending

Between 2006 and 2007, practitioner spending per user grew by 3 percent in full-year users (Table 3-2), slightly less than the 4 percent reported for all users (Table 2-1). This growth is mainly attributable to a 3 percent increase in the total number of services per user and a 1 percent increase in the average payment-per-RVU; average service complexity (RVUs per service) remained the same as in 2006.

TABLE 3-2: Decomposition of Expenditure Per User by Coverage Type, Plan Type, Region, and Payer Market Share, 2006–2007

	Percentage of Users	Expenditure Per User		Number of Services Per User		RVU Per Service		Payment Per RVU
	2007	2007	Percentage Change from 2006	2007	Percentage Change from 2006	2007	Percentage Change from 2006	Percentage Change from 2006
ALL	100%	$1,081	3%	16.4	3%	1.7	0%	1%
RISK TYPE								
High-Risk User	33	2,067	3	28.4	3	1.9	0	1
Medium-Risk User	32	814	3	14.0	3	1.6	-1	1
Low-Risk User	35	397	4	7.4	3	1.5	0	1
COVERAGE TYPE								
Non-CDHP	95	1,084	3	16.5	3	1.7	0	1
1: Individual Plan	6	978	0	15.1	-2	1.7	1	1
2: Private Employer Plan	36	1,108	6	16.2	4	1.7	-1	2
3: Public Employer Plan	40	1,077	2	17.0	2	1.7	0	0
4: CSHBP	12	1,109	4	16.3	3	1.9	0	1
CDHP	5	1,031	7	16.1	10	1.7	5	-8
PLAN TYPE								
Non-HMO	63	1,166	2	18.9	1	1.6	0	1
HMO	37	939	5	12.3	5	2.1	-1	1
REGION								
National Capital Area	33	1,148	5	16.1	4	1.8	-1	1
Baltimore Metropolitan Area	46	1,072	3	17.2	3	1.7	0	1
Other Maryland Area	21	1,000	2	15.4	1	1.7	0	1
PAYER MARKET SHARE								
Largest Payers	74	1,066	2	16.9	3	1.7	-1	0
Other Payers	26	1,126	6	15.1	3	1.7	0	3

NOTES: 1. CDHP = consumer-directed health plan; CSHBP = Comprehensive Standard Health Benefit Plan; HMO = health maintenance organization.
2. Population is users enrolled in the same insurance plan for the entire year.
3. 2007 relative value units were applied to both years' data.

BY EXPENDITURE RISK SCORE The growth from 2006 to 2007 in average expenditure per user varied little by risk status (Table 3-2). The risk categories also exhibited similar increases in their service volumes (3 percent) and in the average payment-per-RVU for their mix of services (1 percent). Their service complexity—measured by RVUs-per-service—was unchanged, or, in the case of medium-risk users, slightly lower.

When the risk categories are compared on their utilization measures, it is apparent that their differences in per-user payment—discussed in *Per-User Expenditures by Risk Score* on page 13—are driven mainly by differences in service volume. Average annual service volume for a medium-risk user in 2007 is about twice that of a low-risk user, and the annual service volume for a high-risk user is about four times that of a low-risk user. Compared to the differences in service volume, service complexity varies less across the risk categories. The average complexity of services used by high- and medium-risk users was about 30 percent and 10 percent higher, respectively, than the average complexity of services obtained by low-risk users. The relative magnitudes of difference in service volume and complexity by risk status in 2007 are almost identical to those observed in 2006 (data not shown).

BY PLAN CHARACTERISTICS The growth in expenditure per user varies considerably by plan characteristics (Table 3-2). While other coverage types demonstrated an increase in per-user spending among their full-year users in 2007—with growth rates ranging from 2 percent for public employer plans to 7 percent for CDHPs—individual market plans exhibited no change in per-user spending. As a result, the gap in per-user spending between users insured through the individual market and those with other types of coverage widened in 2007. In 2006, per-user spending among individual market users was 6 percent, 7 percent, and 8 percent lower than that for private employer plan, public employer plan, and CSHBP plan users; in 2007, these differences increased to 12 percent, 9 percent, and 12 percent, respectively. Per-user spending for the individual market plans was unchanged in 2007 due to a 2 percent decline in service volume—the only such decline among the coverage types—which offset 1 percent increases in both service complexity and the average payment-per-RVU.

For public employer plans and CSHBP plans, both service complexity and unit prices (payment per RVU) were relatively stable from 2006 to 2007; consequently, the changes in per-user spending in these plans were driven by changes in per-user service volume. But private employer plans seem to have experienced a different dynamic in 2007 than did plans of other coverage types in terms of service volume, complexity, and unit pricing. Private employer plans had the highest rates of growth in both service volume per user (4 percent) and payment-per-RVU (2 percent). Additionally, private employer plans are the only coverage type with a decline in service complexity, albeit of just 1 percent.

Characteristics of CDHPs changed considerably from 2006 to 2007, with relatively large increases in service volume per user, service complexity (RVUs-per-service), and payment per user, and a relatively large decrease in payment-per-RVU. These shifts are related to the entry of the largest payer into the CDHP market. This brought many more users into CDHPs in 2007, which changed the CDHP user profile and made the mix of services utilized more similar to those of users in non-CDHPs. The market power of this payer enables it to set payments-per-RVU below those of payers with less market share, as evidenced by the 8 percent decrease in the average payment-per-RVU in CDHPs.

Per-user spending grew more than twice as fast among HMO plans (5 percent) as among non-HMO plans (2 percent) in 2007 (Table 3-2).[19] The main driver for the relatively high growth rate in per-user spending for HMO plans was an increase in service volume (also at 5 percent). The higher growth in reported service volume by HMO plans may, in part, reflect a slight reduction in the share of HMO services that were reimbursed using capitation from 2006 to 2007.[20] Non-HMO plans had a much smaller increase in service volume of just 1 percent. The average payment-per-RVU increased by 1 percent in both HMO and non-HMO plans.

BY USER REGION With each region exhibiting the same 1 percent increase in payment-per-RVU and negligible changes in service complexity,

[19] Because professional services that are paid on a capitated basis are not included in this report, comparisons between users in non-HMO and HMO plans should be made with caution. See *Note on Capitated Services* on page 6.

[20] See footnote 14.

regional differences in per-user spending growth are explained by different rates of growth in service volume (Table 3-2). Per-user spending grew fastest in the NCA, driven by a 4 percent increase in service volume. The BMA had slightly lower growth in service volume, and consequently lower growth in spending per user (3 percent). The Other Maryland Area, having just a 1 percent increase in service volume, exhibited the smallest increase in per-user spending (2 percent).

The large growth in per-user spending in the NCA widened the gap between the NCA average and the average spending for users in the other two regions. In 2006, per-user spending among those residing in the NCA was 5 percent and 12 percent higher than for users in the BMA and Other Maryland Area, respectively; in 2007, it grew to 7 percent and 15 percent higher, respectively.

BY PAYER MARKET SHARE Compared to the growth in per-user spending for the two largest payers, other payers had spending growth that was almost three times as large: 6 percent versus 2 percent (Table 3-2). Both the largest and the other payers experienced a 3 percent growth in per-user service volume, with little or no change in service complexity. But, while the largest payers had no change in their average payments-per-RVU, the average payment-per-RVU among the other payers grew by 3 percent, leading to the larger growth rate in per-user spending between these payers. The 6 percent growth in per-user spending for other payers widened the gap in spending between these payers and the largest payers. In 2007, the average spending per user for the other payers is 6 percent higher than that of the largest payers in 2007, compared to a 2 percent difference in 2006.

FIGURE 3-1A: Distribution of Coverage Type by Payer Market Share, 2007

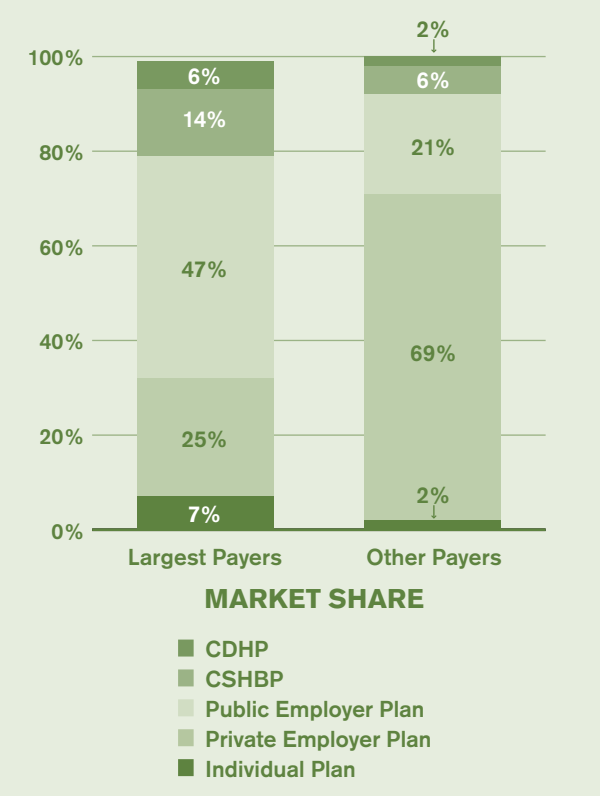
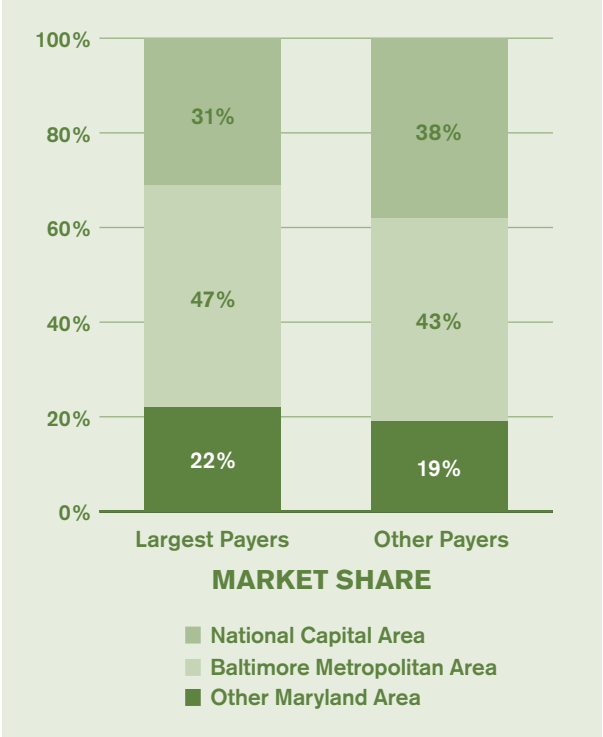


FIGURE 3-1B: Distribution of Region by Payer Market Share, 2007



NOTE: Detail may not add to total due to rounding.

TABLE 3-3: Payer Characteristics, Expenditures, and Utilization by Plan Type and Payer Market Share, 2007

CATEGORY	Non-HMO	All
LARGEST PAYERS		
Percentage of Users	66%	100%
Expenditure Per User	$1,147	$1,066
Number of Services Received Per User	19.2	16.9
RVU Per Service	1.6	1.7
Payment Per RVU	$37.0	$36.5
Ratio of Expenditure Per User to Expenditure Per User at Medicare Payment Rate	0.98	0.96
OTHER PAYERS		
Percentage of Users	55%	100%
Expenditure Per User	$1,229	$1,126
Number of Services Received Per User	17.7	15.1
RVU Per Service	1.6	1.7
Payment Per RVU	$43.9	$42.7
Ratio of Expenditure Per User to Expenditure Per User at Medicare Payment Rate	1.15	1.12

NOTES: 1. Population is full-year users with at least one fee-for-service (Non-HMO or HMO).
2. Includes services with payment >$0 and RVU >0.

Characteristics of Users by Payers by Market Share

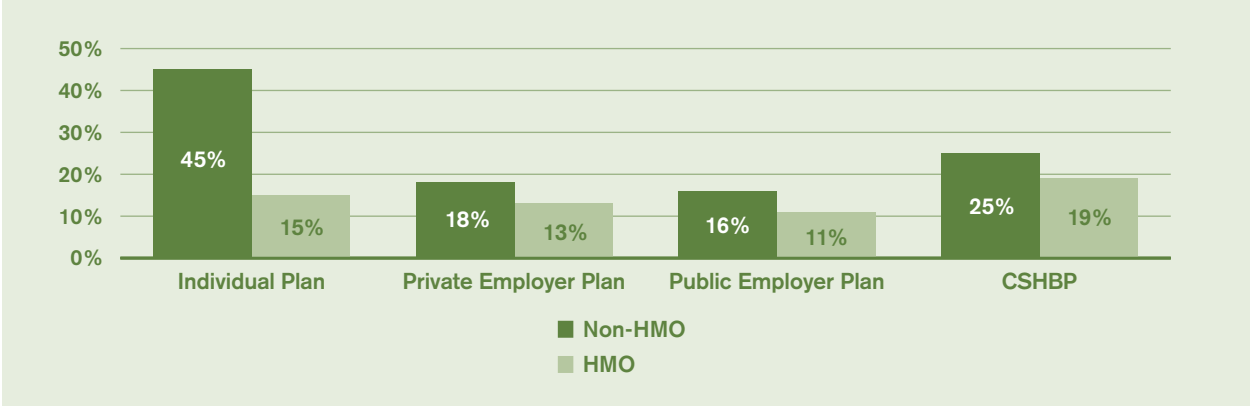
The mix of users enrolled with the largest payers differs from the user mix of the other payers in terms of coverage type, plan type, and region of residence. As in previous years, full-year users insured by payers other than the two largest payers in the state were highly concentrated in non-CDHP private employer plans (69 percent) and public employer plans (21 percent) (Figure 3-1A). The distribution by coverage type is more dispersed for full-year users insured by the two largest payers in the state—a little less than one-half were enrolled in non-CDHP public employer plans, followed by 25 percent in non-CDHP private employer plans, and 14 percent in non-CDHP CSHBP plans. The largest payers also have a higher share of full-year users in CDHPs, compared with other payers (6 percent versus 2 percent). Although the two largest payers in the state had a slightly higher proportion of users in the high-risk group than did other payers in 2006, user risk mix in the two payer groups is the same in 2007 (Table 3-1).

Two-thirds of full-year users covered by the largest payers in 2007 were enrolled in non-HMO plans (Table 3-3), (3 percent higher than in 2006 [data not shown]). The relative increase in non-HMO enrollment among users covered by the largest payers is not evident in users covered by other payers: their non-HMO share—slightly smaller, at 55 percent—did not change from 2006 to 2007.

Annual per-user spending in non-HMO plans was 7 percent lower among users covered by the largest payers than among users covered by other payers in 2007: $1,147 versus $1,229 (Table 3-3). The average complexity (RVUs-per-service) of non-HMO services was the same for each payer type; however, non-HMO users covered by the largest payers averaged 8 percent more services during the year than did users covered by other payers: 19.2 services per user versus 17.7 services per user. The lower level of per-user spending in non-HMO plans managed by the largest payers results solely from the largest payers' having an average payment-per-RVU 16 percent lower than the average payment-per-RVU in non-HMO plans managed by the other payers: $37.00 versus $43.90.

Relative to what the spending per user would have been had their professional services been paid according to the 2007 Medicare payment schedule, per-user payment for those covered by the largest payers was 4 percent lower overall, and 2 percent lower for non-HMO users in particular. In contrast, the average payment per user for those covered by the other payers was 12 percent higher than it would have been under the 2007 Medicare payment schedule, with a 15 percent difference for non-HMO users in particular.

FIGURE 3-2: Percentage Paid Out-of-Pocket by Non-CDHP Coverage Type and Plan Type, 2007



Share of Expenditures for Professional Services Paid Out-of-Pocket

Payments made directly to providers by users of care reflect the cost-sharing (including deductibles, copayments, and coinsurance) required under the terms of their policies. The overall patient cost-sharing burden for full-year users—measured by the share of total spending paid out-of-pocket—was 18 percent in both 2007 and 2006 (data not shown). Patient cost-sharing generally differs by plan type, with HMO benefits tending to result in a lower share of spending paid out-of pocket by the user, compared with non-HMO benefits, as shown in Figure 3-2; within each non-CDHP coverage type, HMO users paid a smaller share of the payments for their professional services out-of-pocket than did non-HMO users. As discussed in Chapter 2, this difference may reflect the fact that non-HMO users—unlike those in HMOs—have coverage for out-of-network services, which require higher out-of-pocket payments (i.e., balance billing) than in-network services.

Across the coverage types, non-CDHP public employer plans were associated with the lowest cost-sharing percentages in both HMO (11 percent) and non-HMO plans (16 percent). As expected, CDHP users paid a relatively high share of their expenditures out-of-pocket due to the benefit structure of CDHPs, (33 percent in 2007 [data not shown]). However, the highest cost-sharing percentage in 2007, 45 percent, occurred among full-year users in non-HMO, non-CDHPs purchased in the individual market.

Non-HMO users, on average, paid 20 percent of their practitioner expenditures out-of-pocket, compared with 14 percent among HMO users. The average share of spending for practitioner services paid out-of-pocket was about 2 percent higher for users covered by the two largest payers than for those covered by other payers in 2007, which is likely related to the fact that non-HMO users account for a larger share of the largest payers' users than of the other payers' users (about two-thirds versus one-half, Table 3-3).

APPENDIX A: Technical Background: Summary of Data, Methods, and Caveats for This Report

Tables and figures in this report are based on services and payments captured in the Maryland Medical Care Data Base (MCDB). The MCDB contains extracts of insurance claims[21] for the services of physicians and other medical professionals such as podiatrists, psychiatrists, nurse practitioners, and therapists. Insurance companies and HMOs meeting certain criteria[22] are required to submit these data to the Maryland Health Care Commission (MHCC) under the Code of Maryland Regulations (COMAR) 10.25.06 on health care practitioner services provided to Maryland residents. For calendar year 2007, the MHCC received usable data from 22 payers, including all major health insurance companies.[23, 24] Data from Great-West Life & Annuity Insurance Company were excluded this year for consistent comparison with 2006. A list of these 23 payers is included in Appendix D.

Each professional service generates a separate record in the MCDB. Patients are identified by concatenating the payer identification (ID), plan-specific user ID (an encrypted number generated by each payer), the birth year and month of the user, and the user's gender. Insurers use a standard format for reporting the data. Each data record identifies the service provided; payments from the insurer and patient (for noncapitated care); physician specialty; user characteristics such as age, gender, and ZIP code of user residence; clinical diagnosis codes; and other attributes of care, such as site of service and type of insurance coverage.

This report uses categories and definitions for region, coverage type, plan type, and market share comparable to those in previous reports. Beginning with the 2005–2006 report, users who were enrolled in more than one plan in a year or who moved from one region to another during the year are assigned to the "type" of plan or geographic region that is associated with the highest total payment. If two regions or two types of plans tie in terms of total payment, the user is assigned to the region or "type" of plan with the highest total number of services. This assignment methodology mainly affects part-year users. It should also be noted that the distribution percentages for utilization and payment by coverage type are calculated with the inclusion of Medicare and Taft-Hartley payers. But these "other" payers account for such a small share of the market that their numbers are not reported in the tables.

This report continues to employ two analytic tools that were introduced in the 2005–2006 practitioner utilization report: expenditure risk status and enrollment period. Users have been grouped into low-risk, medium-risk, and high-risk groups, based on their expenditure risk scores from the Chronic Illness and Disability Payment System (CDPS). This algorithm, developed by researchers at the University of California, San Diego, creates person-level expenditure risk scores from the diagnosis codes listed on health care service records. Although the algorithm was developed using the diagnoses listed on all service records (professional and institutional), the MCDB scores reflect the diagnoses on the professional records only. Additionally, the CDPS algorithm was applied only to users who were enrolled in reporting plans for the entire year,[25] to avoid developing biased scores based on partial-year data. Users with scores in the bottom one-third of the score distribution are categorized as "low-risk," and those with scores in

[21] The MCDB also includes encounter records for capitated HMO services, but encounter records were not used in these analyses because they lack payment information. See *Note on Capitated Services* on page 6 for a description of capitated services.

[22] The companies are licensed in the State of Maryland and collect more than $1 million in health insurance premiums.

[23] A number of small payers received waivers from contributing data, but these payers together account for less than 1 percent of total health insurance premiums reported in Maryland.

[24] One of the payers submitted data to MCDB independently in 2006 consolidated with another payer, resulting in one fewer payer in the MCDB in 2007.

[25] Plans began reporting enrollment data for users in 2005, making it possible to analyze those users who were enrolled all year.

the top one-third are categorized as "high-risk".[26] The decomposition of growth in per-user spending by volume, service complexity, and payment level, is reported in Chapter 3 using only full-year users, so it is not distorted by the anomalies introduced by including part-year enrollees.

This report is based on data for professional services that were paid on a fee-for-service basis. As discussed in Chapter 1, records for services that were paid using capitation are not included because they lack payment information. Because capitated services are provided only through health maintenance organization (HMO) plans, reported measures for users in non-HMO plans are unaffected by the exclusion of capitated services. However, the exclusion of capitated services results in the estimates' of per-user service utilization and spending being somewhat understated for HMO users, and, by extension, for all users (although to a lesser degree). It is difficult to predict how much these values are understated, but because capitated professional services accounted for 18 percent of the professional HMO relative value units (RVUs)—accounting for 7 percent of all professional RVUs—the impact on per user HMO measures is likely to be significant. To the extent that certain less-complex services—such as routine primary care and laboratory tests—are more likely to be paid on a capitated basis than are more complex services, average service complexity in HMO users may be artificially high due to exclusion of some lower-intensity services. Additionally, there was a relatively small number of users in HMO plans who obtained only capitated services and so were omitted from these analyses.

[26] The resulting risk status groups do not each include exactly one-third of the population, since the cutoff score values applied to many users. Overall, about 32 percent of users were in each of the low-risk and medium-risk groups, while about 36 percent fell in the high-risk group.

APPENDIX B: Supplemental Tables for Chapter 2

These data tables were generated with the same analysis file used to produce Table 2-1. The users have at least one professional service claim with payment information; capitated health maintenance organization services, which lack payment information, were excluded.

TABLE B-1: Per-Capita Payment for Professional Services by Quintile of Payment, 2007

PER CAPITA PAYMENT QUINTILE	PAYMENT					
	All Plans		Non-HMO Plan		HMO Plan	
	Mean	Median	Mean	Median	Mean	Median
TOTAL	$974	$444	$1,052	$489	$848	$380
1	87	86	94	93	78	79
2	227	224	251	248	196	193
3	453	445	498	489	388	380
4	917	888	1,003	971	786	760
5	3,188	2,325	3,416	2,517	2,793	2,003

NOTE: HMO = health maintenance organization.

TABLE B-2: Per-Capita RVUs for Professional Services by Quintile of Payment, 2007

PER CAPITA PAYMENT QUINTILE	RVUs					
	All Plans		Non-HMO Plan		HMO Plan	
	Mean	Median	Mean	Median	Mean	Median
TOTAL	2.5	12.4	27.3	13.5	23.0	10.8
1	6.5	2.5	2.8	2.8	2.4	2.5
2	12.6	6.5	7.3	7.3	5.7	5.6
3	24.6	12.6	14.0	14.0	11.1	10.9
4	61.6	24.6	27.5	27.5	22.2	21.4
5	80.7	61.6	85.0	85.0	73.3	55.3

NOTE: RVUs = relative value units; HMO = health maintenance organization.

APPENDIX C: Supplemental Tables and Figures for Chapter 3

TABLE C-1: Distribution of Payments for Professional Services Used by Full-Year Users by Users' Risk Status and Coverage Type, 2007

	Percentage of Users			
	All Users	Low-Risk Users	Medium-Risk Users	High- Risk Users
ALL	100%	13%	24%	63%
COVERAGE TYPE				
Non-CDHP	95	13	24	63
1: Individual Plan	5	18	28	54
2: Private Employer Plan	37	13	25	62
3: Public Employer Plan	40	12	23	66
4: CSHBP	12	13	24	63
CDHP	5	14	25	61

NOTES: 1. CDHP = consumer-directed health plan; CSHBP = Comprehensive Standard Health Benefit Plan.
2. Population is full-year users with at least one service with payment information; capitated HMO services were excluded.
3. Includes services with payment >$0 and RVU >0.

TABLE C-2: Expenditure Per User by Coverage Type, Plan Type, Region, and Payer Market Share, 2006

	Percent of User	Number of Users	Expenditure of User	Number of Services per User	RVU per Services
ALL	100%	1,804,558	$1,046	16.0	1.7
COVERAGE TYPE					
Non-CDHP	99	1,778,935	1,048	16.0	1.7
1: Individual Plan	5	98,368	982	15.4	1.7
2: Private Employer Plan	40	723,402	1,045	15.5	1.7
3: Public Employer Plan	40	722,220	1,052	16.6	1.7
4: CSHBP	13	232,773	1,068	15.8	1.9
5: Other	0	2,172	1,360	16.3	1.8
CDHP	1	25,623	963	14.7	1.6
PLAN TYPE					
Non-HMO	61	1,103,403	1,142	18.7	1.6
HMO	39	701,155	895	11.8	2.1
REGION					
National Capital Area	33	593,213	1,097	15.4	1.8
Baltimore Metropolitan Area	46	832,548	1,042	16.7	1.7
Other Maryland Area	21	378,797	976	15.2	1.7
PAYER MARKET SHARE					
Largest Payers	74	1,329,435	1,041	16.5	1.7
Other Payers	26	475,123	1,062	14.6	1.7

NOTES: 1. CDHP = consumer-directed health plan; CSHBP = Comprehensive Standard Health Benefit Plan; HMO = health maintenance organization.
2. Population is full-year users with at least one service with payment information; capitated HMO services were excluded.
3. Includes services with payment >$0 and RVU >0.

TABLE C-3: Distribution of Expenditure Risk Scores, 2007

RISK SCORE PERCENTILE	Risk Score
01	0.20
05	0.20
10	0.23
25	0.26
50	0.78
75	1.66
90	2.93
95	3.81
99	7.20

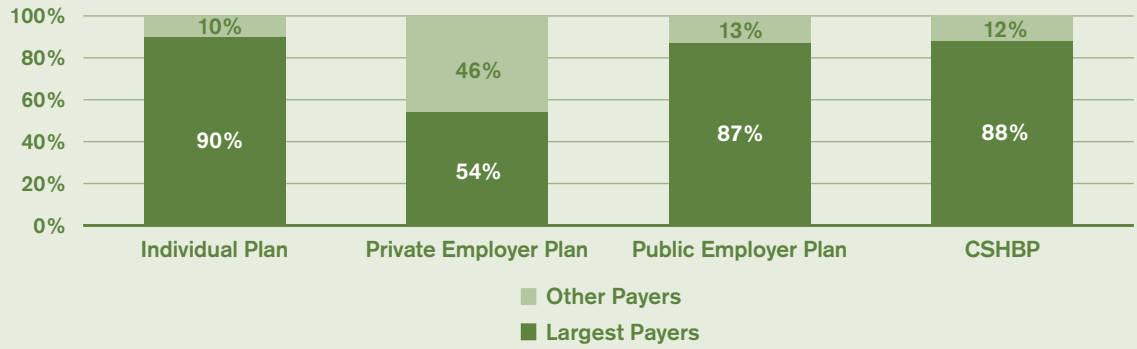
NOTES: 1. Population is full-year users enrolled in the same insurance plan for the entire year.
2. Risk scores were generated using the Chronic Illness and Disability Payment System (CDPS), which takes into account the impact of both the number and mix of diagnoses on health care expenditures; see *Expenditure Risk Score* on page 4 for a definition.

TABLE C-4: Comparison of the Median Expenditure Risk Score for Each Coverage Type with the Overall Median Score, 2007

CATEGORY	Median CDPS	Ratio
ALL	**0.78**	**1.00**
COVERAGE TYPE		
Non-CDHP	**0.78**	**1.00**
1: Individual Plan	0.58	0.74
2: Private Employer Plan	0.77	0.99
3: Public Employer Plan	0.82	1.04
4: CSHBP	0.80	1.03
CDHP	**0.71**	**0.91**

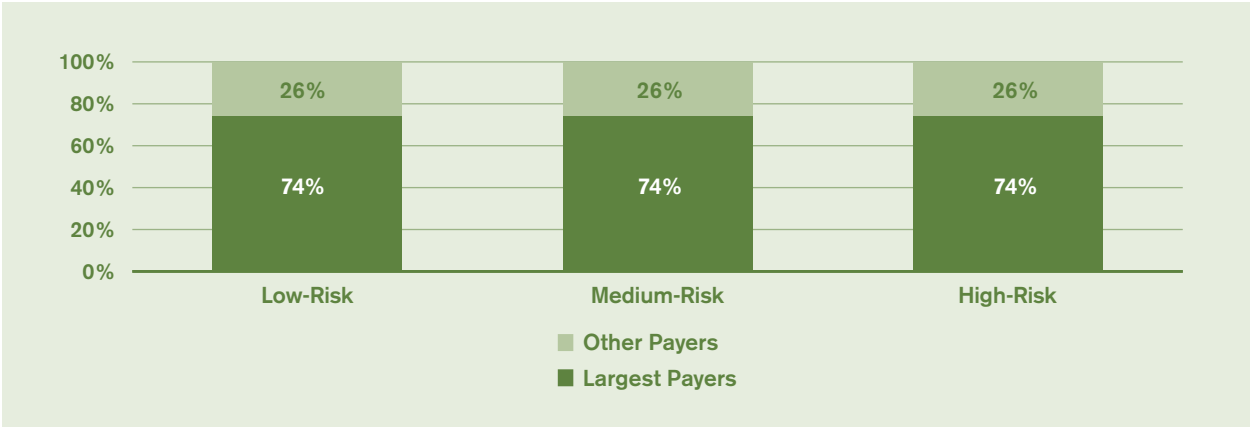
NOTES: 1. CDHP = consumer-directed health plan; CSHBP = Comprehensive Standard Health Benefit Plan; CDPS = Chronic Illness and Disability Payment System.
2. Population is full-year users enrolled in the same insurance plan for the entire year.
3. Risk scores were generated using the Chronic Illness and Disability Payment System, which takes into account the impact of both the number and mix of diagnoses on health care expenditures; see *Expenditure Risk Score* on page 4 for a definition.

FIGURE C-1A: Distribution of Payer Market Share by Coverage Type, 2007



NOTES: 1. CSHBP = Comprehensive Standard Health Benefit Plan.
2. Population includes only full-year enrollees.

FIGURE C-1B: Distribution of Payer Market Share by Risk Status, 2007



NOTE: Population includes only full-year enrollees.

FIGURE C-1C: Distribution of Payer Market Share by Plan Type, 2007

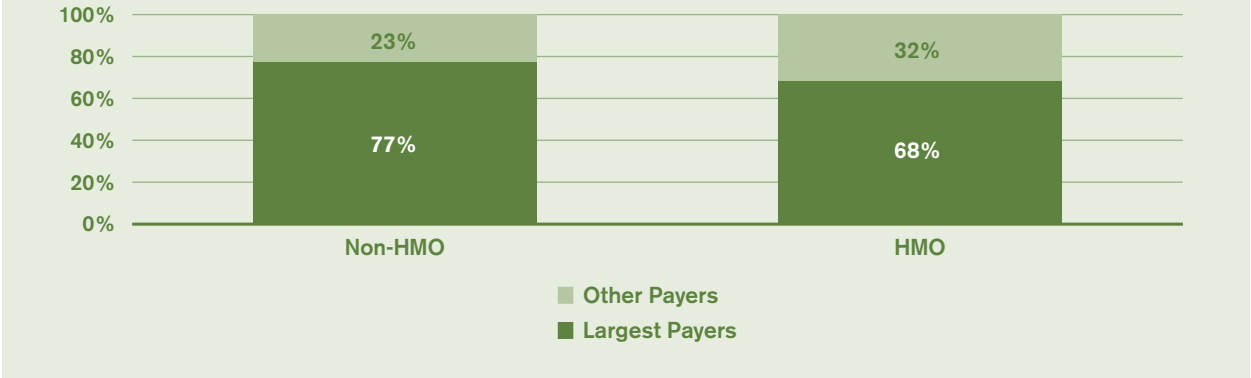
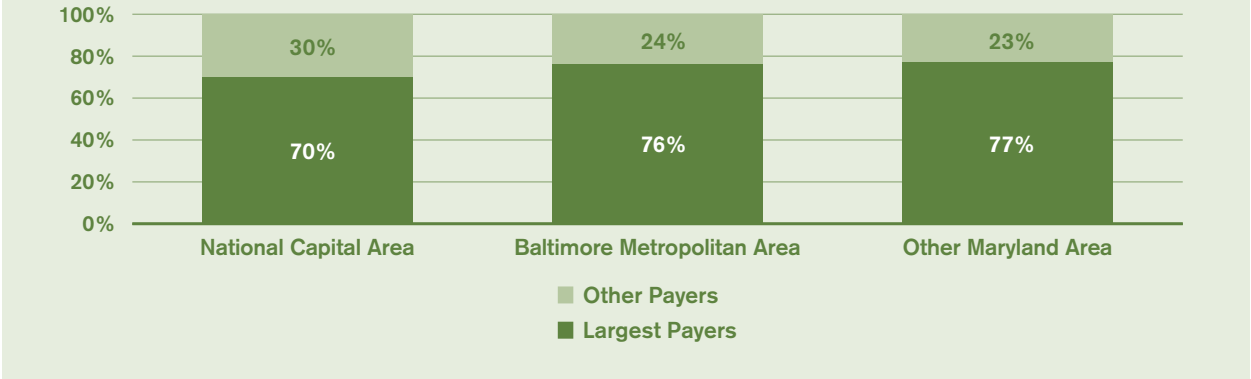


FIGURE C-1D: Distribution of Payer Market Share by Region, 2007



APPENDIX D:
Payers Contributing Data to This Report

TABLE D-1: Payers Contributing Data to This Report

PAYER	Payer Identification Number
Aetna Life and Health Insurance Co.	P020
Aetna U.S. Healthcare	P030
American Republic Insurance Co.	P070
CareFirst BlueChoice, Inc.	P130
CareFirst of MD, Inc.	P131
CIGNA Healthcare Mid-Atlantic, Inc.	P160
Time Insurance Co. (Assurant Health)	P280
Golden Rule Insurance Co.	P320
Graphic Arts Benefit Corporation	P325
Guardian Life Insurance Company of America	P350
Unicare Life and Health Insurance Co.	P471
Kaiser Foundation Health Plan of Mid Atlantic States, Inc.	P480
MAMSI Life and Health Insurance Co.	P500
Fidelity Insurance Co.	P510
MD-Individual Practice Association, Inc.	P520
MEGA Life & Health Insurance Co.	P530
Optimum Choice Inc.	P620
Coventry Healthcare of Delaware, Inc.	P680
State Farm Mutual Automobile Insurance Co.	P760
United Healthcare Corporation	P820
Trustmark Insurance Co.	P830
Union Labor Life Insurance Co.	P850
United Healthcare of the Mid-Atlantic, Inc.	P870

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